



# Bonneville Power Administration

18<sup>th</sup> NDIA Security Division  
Symposium & Exhibition  
Reston, Virginia  
June 24-27, 2002

Robert L. Windus  
Manager, Security & Emergency  
Management

# Outline

- **Purpose**
- **System Description**
- **Transmission & Substation System Design**
- **Unique Security Concerns**
- **Security Enhancements post 9/11**
- **National Security Issues**
- **Mitigation**
- **Summary**
- **Conclusion**



# Purpose

- To provide a description of a major high voltage power system, it's facilities, security concerns and vulnerabilities





# System Description



# System Description (cont.)

- Service Area –  
OR, WA, ID, MT  
and portions of  
NV, CA, UT &  
WY
- Over 15,000  
miles of High  
Voltage  
Transmission



# System Description (cont.)

- Approximately 590 Facilities

- 350 HV Substations
- Microwave System
- Maintenance Facilities
- Warehouses
- Administrative Offices
- 3 Control Centers
- DC Converter Station
  - Longest DC line in the world
    - 860 miles



# System Description (con't)

- Operates & manages, in partnership with USACE and BOR, the FCRPS
  - Columbia & Snake River Projects
  - 29 Federal Projects





## **System Description (cont.)**

- **Generation – East; Load – West**
- **Long transmission corridors**
- **Environment, Fish & Wildlife**
- **Self financed; Regional Punch Bowl**



# Transmission & Substation System Design

## Federal Columbia River Power System



# Transmission & Substation System Design (cont.)



- Typically designed only with safety in mind
- Secured typically by chain-link fence
- Generally, no security systems in place, except for key & locks

# Transmission & Substation System Design (cont.)

- Control houses, control equipment and key electrical system components exposed to vandalism sabotage and terrorism
- Economically not feasible to protect transmission lines





# Unique Security Concerns

- Unmanned facilities
- Remote Locations
- Limited law enforcement resources



# Unique Security Concerns (cont.)

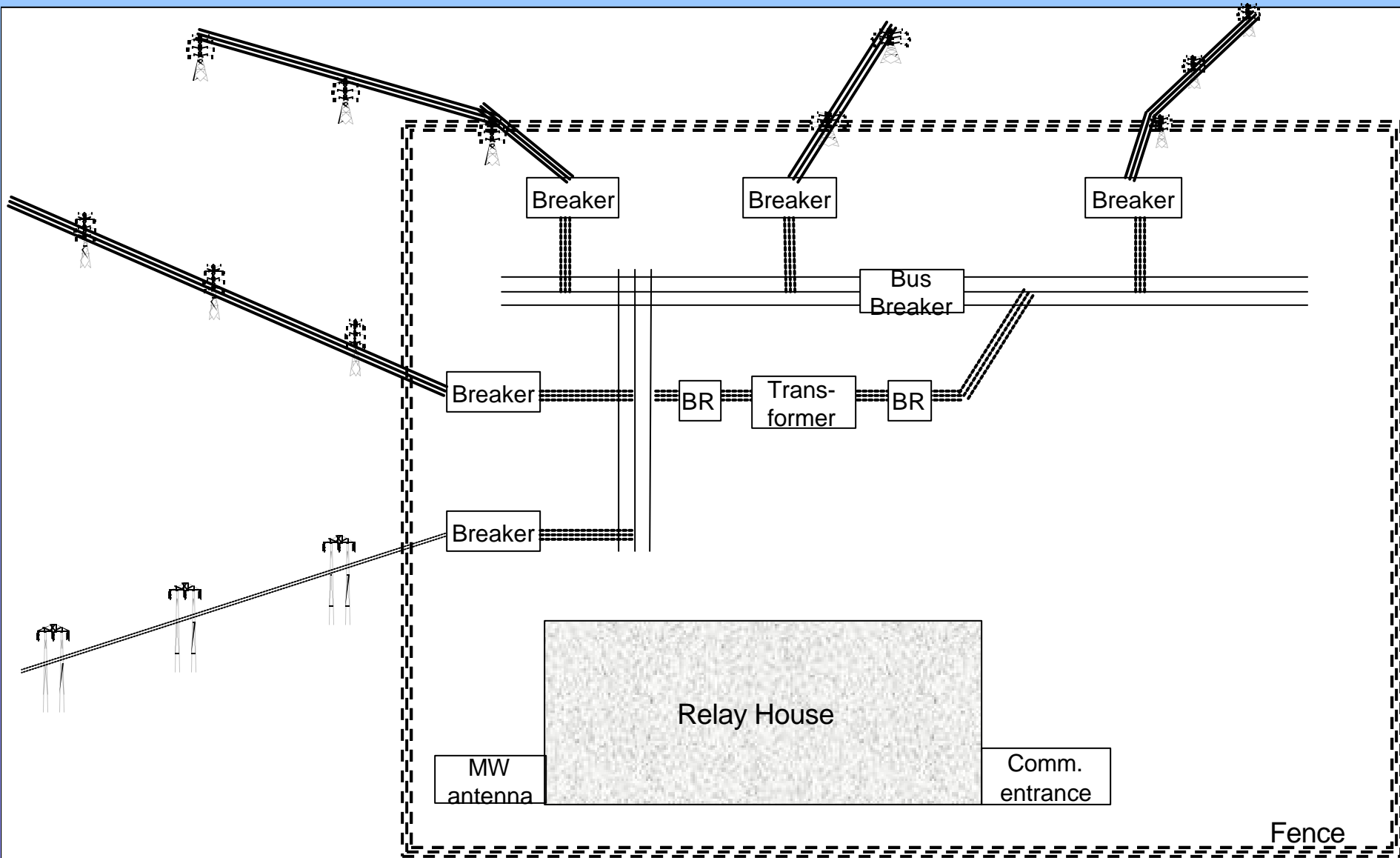
- Long response times
- Security not factored into design
- Facilities generally 40-50 years old
- Replacement parts getting difficult to obtain
- Damage to Substations and/or Switchyards can separate load from generation for long periods
- Do not have to damage dams to cause long term disruption

# Unique Security Concerns (cont.)

- Electrical system is a ‘softer’ target
- Facilities open to observation
- Facilities vulnerable
  - Stand-off attack
  - Easy access through fence
- Control houses generally a part of site perimeter

# Unique Security Concerns (cont.)

## Schematic High Voltage Power System Substation





# Security Enhancements Post 9/11

- Positive ID
- Access Controls – pedestrian & vehicular
- Additional security officers
- Traffic control; modified entry & exit



# Security Enhancements Post 9/11

## (cont.)



- Increased frequency of facility checks
- Increased aircraft patrol
- Under current YELLOW ALERT; using the 'buddy system'
- Increased LLEA and NG liaison

# Security Enhancements Post 9/11

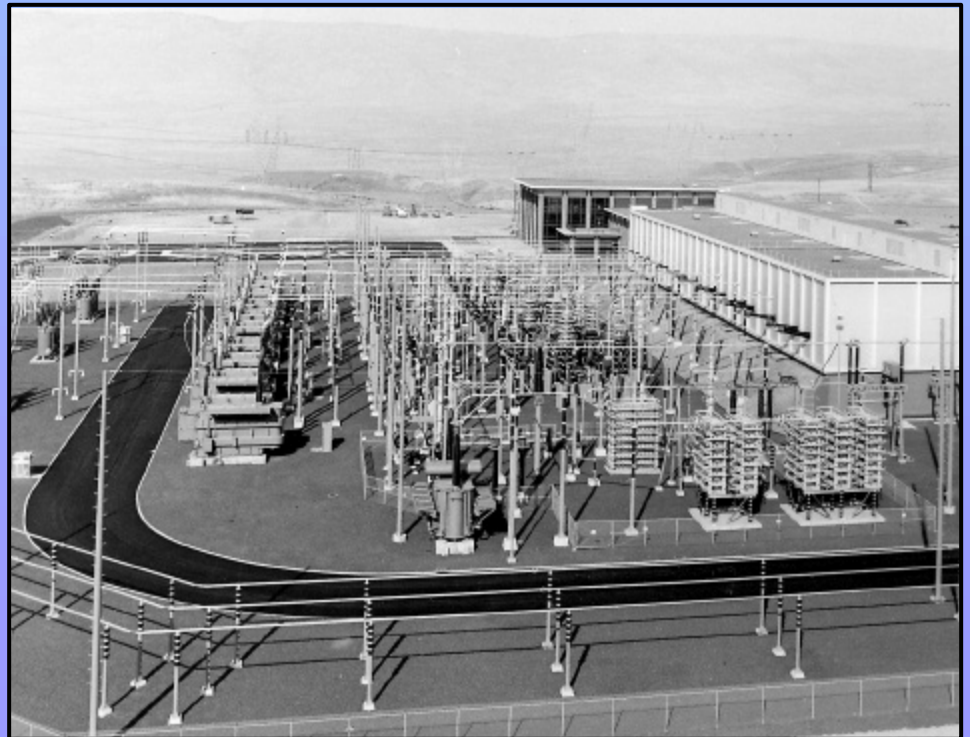
## (cont.)

- Security policy & procedures
- Updated employee security & emergency response guides
- New gate design & standard



# Security Enhancements Post 9/11 (cont.)

- New security policy/standard for facilities
  - Baseline standard
  - Enhancement levels  
based upon Homeland Security Advisory System
- Employee awareness
- NO TOURS
- Review of all internal & external web pages





# National Security Issues Impacting Electrical Power



- Loss of Industrial base
- All HVE (transformers, circuit breakers, etc.) now Foreign Produced
- No national or industry-wide Sparing Policy

# National Security Issues

## Impacting Electrical Power (cont.)

- No industry-wide facility Security Standard
  - NERC Initiatives
    - “An Approach to Action”
    - Standard utility threat definition
    - Implementation of a risk assessment standard
- Utilities need a clear understanding of the Threat
- Effectiveness of security systems in use is LOW
- No clear understanding of Consequences of lost service among customers



# Mitigation

- Utility coordination & information exchange
- IFIP – RAM-D & RAM-T
  - FCRPS Assessment
  - Have approved security upgrades
  - Pilot Project – digital CCTV, fiber IDs, card key, fencing
  - Substations, Maintenance Facilities, and Dams
- Education & Awareness
  - Law Enforcement
  - Utilities
  - Customers



# Mitigation (cont.)

- Understanding Interdependencies – how we as an industry fit into national critical infrastructure
- “Blue Cascades” Interdependency Exercise
  - Conducted June 12, 2002
  - A cross-border exercise involving OR, WA, ID, MT, AK, and Yukon, BC, Alberta
  - Utilities, Water Supply, Telecom, Oil and Gas, Banking and Finance, DoD and Emergency Services
  - First of it’s kind in US and Canada
- A standard Risk & Vulnerability Assessment Methodology for the industry
- NIDC, NERC, FERC, EPRI, DOE, EEI, DOD, TSWG, NSC/CIAO, etc. Outreach

# Mitigation (cont.)

- Top to bottom emergency plan reviews & update
- Reviewing & updating mutual support agreements – MOA's
- Transition from security enhancements  
→ RECOVERY PLANNING

## Mitigation (cont.)

- Looking at the **THREAT SPECTRUM**
  - It is obvious that we cannot protect ourselves from all possible scenarios
- Need to provide a **prudent** level of security protection that makes **economic** & **operational** sense

# Mitigation (cont.)

- Need to better prepare ourselves to RECOVER from any catastrophic event whether natural or human caused



- Need better OPSEC Program within the Energy sector
  - Web page content
  - On-line diagrams
  - At issue is “the Public’s Right to Know”
  - System Maps and Photos
  - Environmental Impact Statement



# Summary

- Electrical Power Systems are difficult to protect
- Utilities are obligated to their shareholders, customers and the nation to protect their infrastructure
- They must make informed and prudent decisions on:
  - What to protect (most critical)
  - What level to protect (appropriate)
  - How to protect (cost-benefit)



# CONCLUSION

**“We look forward to a world founded upon four essential human freedoms. The first is freedom of speech and expression.....The second is freedom of every person to worship God in his own way.....The third is freedom from want.....The fourth is freedom from fear”**

**Franklin Delano Roosevelt, 1941**

# Contact Information



Robert Windus

[rlwindus@bpa.gov](mailto:rlwindus@bpa.gov)

(503) 230-5148 [office]      (503) 230-3336 [fax]